Appl. No. 10/538,961
Amdt. dated 06 June 2007
Reply to Final Office Action of 05 April 2007

Attorney Docket No. 57.0547 US PCT

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Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.   (currently amended): A system for inferring geological classes from ~~oilfield well input data~~<u>downhole log data</u> comprising a neural network for inferring class probabilities, characterized in that said system further comprises means for integrating class sequencing knowledge and optimising said class probabilities according to said sequencing knowledge, and storage for said inferred geological classes<u> to establish a relationship between the inferred geological classes and the downhole log data</u>.

2.   (original): The system of claim 1, wherein the means for integrating class sequencing knowledge and optimising said class probabilities according to said sequencing knowledge comprises a hidden Markov model.

3.   (currently amended): An automated system for inferring geological classes from ~~oilfield well input data~~<u>downhole log data</u>, comprising a data input vector, a neural network trained to infer from said input vector a class sequence or class probability vector, and a modifier for correcting said class sequence or class probability vector using prior knowledge of class sequence or class probability, and storage for said inferred geological classes<u> to establish a relationship between the inferred geological classes and the downhole log data</u>.

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4.   (original): An automated system of claim 3, wherein the
        modifier uses the prior knowledge of class probability
        distribution and class transition probability.

5.   (original): An automated system of claim 3, wherein the
        modifier includes a Viterbi sequence optimisation.

6.   (original): An automated system of claim 3, wherein the
        modifier includes a Bayesian based probability
        calculator.

7.   (original): An automated system of claim 3, wherein the
        modifier includes a Bayesian based probability calculator
        and a Viterbi sequence optimisation.

8.   (currently amended): A method for inferring geological
        classes from ~~oilfield well input data~~<u>downhole log data</u>,
        comprising the following steps:
                inferring class probabilities with a neural network;
        ~~and~~
                integrating class sequencing knowledge and
        optimising said class probabilities according to said
        sequencing knowledge;
        and
                storing said inferred geological classes <u>to</u>
        <u>establish a relationship between the inferred geological</u>
        <u>classes and the downhole log data</u>.

9.   (original): The method of claim 8, wherein the
        integrating class sequencing knowledge and optimising
        said class probabilities according to said sequencing
        knowledge is achieved according to a hidden Markov model.

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10. (currently amended): A method for inferring geological classes from ~~oilfield well input data~~downhole log data, comprising the steps of generating a data input based on said well input data; using a neural network to generate a class sequence or class probability vector inferred from said input; correcting said class sequence or class probability vector using prior knowledge of class sequence or class probability; and storing said inferred geological classes to establish a relationship between the inferred geological classes and the downhole log data.

11. (original): The method of claim 10, wherein prior knowledge of class probability distribution and class transition probability is used to correct the class sequence or class probability vector.

12. (original): The method of claim 10, wherein the correction includes a Viterbi sequence optimisation.

13. (original): The method of claim 10, wherein the correction includes a Bayesian based probability calculation.

14. (original): The method of claim 10, wherein the correction includes a Bayesian based probability calculation and a Viterbi sequence optimisation.